



US005906750A

United States Patent**Haase**

[19]

[11] **Patent Number:** **5,906,750**[45] **Date of Patent:** **May 25, 1999**[54] **METHOD FOR DEWATERING OF SLUDGE**[76] **Inventor:** **Richard Alan Haase, P.O. Box 623,
Sugar Land, Tex. 77487-0623**[21] **Appl. No.:** **09/055,870**[22] **Filed:** **Apr. 6, 1998****Related U.S. Application Data**[63] **Continuation-in-part of application No. 08/721,557, Sep. 26,
1996, Pat. No. 5,846,435.**[51] **Int. Cl.^o** **C02F 11/12**[52] **U.S. Cl.** **210/727; 210/728; 210/609**[58] **Field of Search** **210/609, 727,
210/728, 732-736**[56] **References Cited****U.S. PATENT DOCUMENTS**

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*Primary Examiner—Jay H. Woo**Assistant Examiner—Betsey Morrison**Attorney, Agent, or Firm—Maryam Bani-Jamali*[57] **ABSTRACT**

A chemical method is provided for the dewatering of biological sludge that has been digested by a thermophilic digestion process. Five versions of the chemical sludge dewatering method are presented. The primary component in the five versions is a polyquaternary amine, preferably of the di-allyl di-methyl ammonium chloride (DADMAC) variety and from the epichlorohydrin di-methyl amine (epi-DMA) variety. By the first sludge dewatering method, the polyquaternary amine is added directly, along with a polyacrylamide, to the biological sludge. By the second sludge dewatering method, the polyquaternary amine and an anionic polyacrylamide are added separately. By the third sludge dewatering method, a quaternized polyacrylamide, having the polyquaternary amine as part of its polymer chain, is produced by copolymerization of acrylamide with monomers of polyquaternary amine quaternization and is added individually to the sludge. By the fourth sludge dewatering method, the quaternized polyacrylamide from method three is added in concert with a cationic polyacrylamide to the sludge. By the fifth sludge dewatering method, aluminum sulfate, ferric chloride and blends thereof are added, along with polyquaternary amine, as the primary component to the sludge.

15 Claims, No Drawings

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